

University of Queensland

PRENTICE COMPUTER CENTRE

MINI/MICRO NEWSLETTER

authorization: Director of the Centre

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1 INTRODUCTION

This is the first Mini/Micro Newsletter. We felt that, with the number of mini and micro computers now being installed on the campus, there was a justification to publish a separate newsletter. The aim of the newsletter is:

- (a) To provide information on mini/micro computer support services offered by the Prentice Computer Centre.
- (b) To advise users of available software, new software releases and software problems.
- (c) To provide information and, where possible, assessments on new products including items from other manufacturers.
- (d) To provide a forum for users to advise of their applications and items of interest to other users of mini/micro computers.

As well as the newsletter, we will initiate a special interest group to enable users of mini/micros to meet at regular intervals. The success of this special interest group will depend on your participation. Preliminary arrangements are being made to form an interim committee representing users to organize this activity. Further information will be provided in the next newsletter.

This first newsletter will be given a wide distribution but if you wish to receive subsequent issues, would you please complete and return the attached form.

Contributions to the newsletter are welcomed and should be directed to the Editor, Mini/Micro Newsletter, Prentice Computer Centre.

## 2 GROWTH OF MINI COMPUTERS

The number of mini computers on the campus will be increased significantly in the first quarter of this year with the installation of seven PDP11/34 systems in addition to the three already installed in departments. As well, another two PDP11/34 are on order. Although the PDP11/34 systems will for some time represent the majority of mini computers on campus, there are of course other mini computers - PDP11/03s, PDP11/10s, PDP11/40s, Hawlett Packard, Varian, Data General and Interdata. In the micro computer area, Intel and Motorola micro computers are increasing in use in the University.

In a subsequent newsletter, we hope to publish a complete inventory of mini/micro computers installed in the University, together with configurations of equipment, software used, applications being developed and names of persons in departments to allow personal contact.

## 3 PRENTICE COMPUTER CENTRE ORGANIZATION

To meet our support functions in the area, we have established a special group at the Prentice Computer Centre. This group will be responsible for assisting departments generally in the area of mini and micro computers and interfacing of special peripherals and instrumentation. However, with current resources, it is not possible for the Centre to provide detailed support in all areas and our main concentration will be on PDP11/34 equipment, peripherals supplied by DEC and certain terminals. As the population of other equipment grows (e.g. PDP11/03s), then we would hope to respond to the new demands.

The staff in this group are as follows:

		<u>Extension No.</u>
Colin Lythall	Systems Engineer	3940
Arthur Hartwig	Systems Programmer	3021
Bryan Claire	Systems Programmer	3021
Kirk Kratzmann	Technician	3940
Terry Lovelock	Technician	3940

Although we have some reasonable experience with the PDP11/34s and PDP11/10s already installed, we are of course still learning and training new staff. In particular, with the large number of systems to be brought into operation in the early part of this year, there are bound to be some problems.

The Computer Centre will provide a maintenance service for PDP11/34 equipment as follows:

- (a) Supply of spares only at the cost of the spares plus 15% to cover administrative costs; or
- (b) A complete preventative and remedial maintenance service including the cost of any spares used. This will be at half the cost of the service offered by Digital Equipment Australia and for budgeting purposes will be around 7½% of the capital value of the equipment per annum; or
- (c) An engineering consulting service to provide your technician with assistance on diagnosis, difficult problems, interfacing other equipment etc. The costs would be the actual costs of staff for the time involved plus 15%.

#### 4 PDP11 SOFTWARE SUPPORT

As regards PDP11/34 software, we were able to negotiate a free licence for system software in most categories of PDP11 software, provided that the systems will be "substantially" connected to the PDP10. It has been assumed that all PDP11 computers will be connected to the PDP10 at some future stage. Another condition of this service is that one copy of the software will be delivered to the Computer Centre and we will be responsible for the distribution to sites within the University. The following software support will be provided:

- (a) The distribution and maintenance of standard PDP11/34 software at no charge.
- (b) Modifications to standard systems software to meet special requirements of departments (e.g. software support of non-standard devices). The cost of the staff for the time

involved plus 30%. This additional cost is to assist in covering our costs in including such special 'patches' you require in maintenance releases of software.

- (c) General programming support. The actual cost of staff for the time involved plus 15%.

The Computer Centre will distribute items of PDP11 software to users authorized to receive them. Such software will be "supported" or "unsupported". No commitment is made to correct or bypass problems with unsupported software. Where such software is supported by another organization, problems will be reported to that organization.

If a problem is encountered with the unaltered release of an item of supported software, the Computer Centre will apply a correction or make a reasonable attempt to develop an emergency bypass.

The following items of software will be supported by the Computer Centre and released as soon as practical. The release will be binary files only and will be on Computer Centre supplied media for which the current media charge will apply.

RSX-11M	Operating system and utilities
RSX-11	Fortran (includes extended Fortran)
RSX-11	Basic
RT-11	Operating system and utilities
RT-11	Fortran
RT-11	Basic
RT-11	Lab Package

Other operating software which will be available by arrangement but not currently supported by the Centre is RSTS/E, MUMPS and the Bell Telephone UNIX system.

It is planned to release the following items of software later:

RSX-11	Algol
RT-11	Algol
RSX-11	Pascal
RSX-11	Runoff
Scientific Subroutine Package	
DECNET-11M	
BIOMAC macros for structured MACRO-11 programming	
DECGraphic-11 Fortran Graphics Package.	

The release of the DECNET-11M software with the provision of suitable hardware will make possible -

- 1) Transfer of files between PDP11 systems or between a PDP11 system and the DECsystem 1090.
- 2) Transfer of data between tasks running in remotely located systems.
- 3) Use of peripheral devices on remotely located systems.
- 4) Updating of files on remotely located PDP11 systems.

## 5 PDP11 MANUALS AND MEDIA

The Centre will hold stocks of the following items of documentation for PDP11s:

Documentation Kits: (contain all manuals describing a system or language)

RSX-11M	
IAS/RSX-11	Fortran
IAS/RSX-11	Basic

Purchase of one of each of these recommended for each RSX-11 system

RT-11 Purchase of this recommended for each RT-11 system.

### Manuals:

PDP-11	Fortran reference (RSX-11M and RT-11)
RSX-11	Basic language reference
RSX-11	Basic user's guide
RSX-11	Fortran user's guide
RT-11	Basic language reference.

Other manuals will be stocked as the need arises.

RK05 cartridges and RX01 floppy diskettes will also be stocked. When available, these items may be purchased in the usual manner.

## 6 PDP11 TRAINING

It is intended to make available the DEC audio-visual courses "Introduction to Mini Computers", "Introduction to the PDP11", and "Introduction to Data Communications". These courses are intended to be taken by individuals and include workbooks to assist in self-testing. Further details will be announced in a subsequent newsletter.

Intensive RSX-11 courses are planned for the May mid-semester break and July semester recess. Attendance at these courses will require a working knowledge of MACRO-11 as demonstrated by successful completion of a written test. It is also planned to run a hardware course in the early part of the year for technical staff who may be involved in maintenance.

The Computer Centre will conduct PDP11 training sessions each Wednesday from March 1 to May 10 from 2 p.m. to 5 p.m. The location will be at the St. Lucia campus and will be advised later to those attending.

Attendance at these sessions will be limited to 15 people. Nominations for attendance should be directed to Arthur Hartwig (extension 3021) by Wednesday, February 15. Successful nominees will be notified by Monday, February 20. Nominees should try to ensure that they will be available to attend each Wednesday afternoon.

The course will cover care of peripherals and media, use of the PDP11 console, RSX-11M commands and utilities, elementary description of PDP11 architecture, MACRO-11 programming, system procedures such as disk backup. The MACRO-11 content of the course will cover areas required for the RSX-11 course.

In addition to the above, it is recognized that there are many academic staff who have significant programming experience on the PDP10 who may be unable to attend a lengthy course but require transitional training to use the PDP11/34. Our hope is to conduct some tutorials in this area in association with meetings of the Special Interest Group.

## 7 ADD-ON MEMORIES TO PDP11/34

In order to qualify for a Digital software licence, the minimum hardware configuration included in the PDP11 software product description must be purchased from Digital.

There were a number of installations who wished to add additional memory above this requirement. The Centre, in conjunction with the Department of Computer Science, conducted an investigation of the various types available. It will be appreciated that from the viewpoint of maintenance support, spares holdings and the financial advantages of collective purchase, a single supplier should be chosen.

Following evaluation of memories from four different suppliers, a contract has been negotiated for supply of National Semi-Conductor NS-11 Memories. These memory boards are strappable to any PDP11 system (except the 11/03). Each board contains 32K words and thus there is a saving in backplane space.

The boards are available by order through the Computer Centre at a cost of \$2,000 per board of 32K words.

## 8 MINI/MICRO SOFTWARE EXISTING ON THE PDP10

Most of these items of software (and associated help files) can be found on the MXI: directory. The help file for item X can be typed by issuing the command HELP MXI:X from a DECsystem 10 terminal.

For PDP11s:

MACDIX	a MACRO-11 assembler producing absolute format binary files. Resides on SYS:. Same format command string as MACRO-11. No help file exists.
BLISS-11	a high-level systems programming language for PDP11s. Produces MACRO-11 source code which must then be assembled. No help file exists but manual may be read at the Centre.
PAKUNP	see Help file.
HENSUM	see Help file.

In addition, a number of programs exist for stand-alone use on a PDP11 connected to the DECsystem10 via an asynchronous serial line. There is a pair of programs for file transfer between RT-11 systems and the DECsystem10.

A PDP11 relocating loader and linker should be available in the near future.

### Motorola M6800

M68XAS	is the Motorola Cross Assembler. It produces a .HEX file for input to an M6800 system or to the simulator. There is a Help file.
M68EML	is the Motorola simulator.

**PLW** is a Cross Compiler for the high-level language PL/W. The user types in a source file spec in which device and extension, if not supplied, default to DSK: and .PLW respectively. The output is a .R68 file for input to WLNK (see below) and a .DAT (listing) file.

**WXAS** is a Cross Assembler. It requests a source file spec with defaults for device and extension being DSK: and .W68. It produces a listing (.LPT) and either a .R68 file for input to WLNK or a .HEX file similar to that produced by M68XAS. If the program is to be linked to others, the .R68 file is output; however, if it is a stand-alone program, the .HEX is output.

**WLNK** is a program for linking .R68 files output from PLW and/or WXAS. The command line is of the form

`*[<output>=] <input list>`

where <output> is the output file spec and  
       <input list> is a list of one or more input file specs separated by commas. The file specs are as of DIALOG= array in F10 (no sticky devices or ppns). All devices default to DSK:, the output file extension is always .HEX, and input file extensions default to .R68. If omitted the output file takes the same name as the first input file.

The program also asks for RAM and ROM allocations which are specified in the form

`m-n`

where m and n are hexadecimal numbers in the range 0 to FFFF. The output is the .HEX file similar to that produced by M68XAS and a map which is directed to LPT.

## Intel 8080

**I80** is the Intel Cross Assembler  
 See DOC:I80.DOC

**MAC80** Intel macro assembler

**PLM81 and PLM82** are two programs which make up the two passes to cross compile PL/M programs.

**INTERP** is the Intel simulator

## Miscellaneous

**OBJCNV** converts Motorola Format object files to Intel Format files and vice versa.  
 See DOC:OBJNV.DOC for further details.



## 9 MICROPROCESSOR SUPPORT

The Centre has designed and built a development system for Motorola M6800 microprocessors.

To use the system for hardware development, users are required to adopt a compatible bus structure on their prototype systems.

For software development, a wide range of facilities are available including the use of multiple breakpoints, single instruction stepping, downline loading/dumping of programs from/to the PDP10 system, and EPROM programming and erasure.

For further information contact Col Lythall (extension 3940).

## CONCLUSION

The general policies outlined for software and hardware support are tentative at this stage. No doubt they will evolve and hopefully improve as we all obtain more experience. Often our desire to assist is constrained by financial and resource limits but where an attitude of mutual co-operation exists much can be achieved.

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NAME:

PHONE NO:

UNIVERSITY OR INSTITUTIONAL ADDRESS:

Please include my name on the distribution list for future issues of the Mini/Micro Newsletter.

I would be prepared to provide a contribution on the following for a future issue of the Newsletter:

The following are suggestions to improve the Newsletter or the standard of support to Departments by the Prentice Computer Centre in the mini/micro computer area:

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(Signature)

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(Date)